Space Weather Forecast

Issued on Friday, 18 August 2023 at 00:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of isolated Moderate flares (R1 Blackouts).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with the strongest flares remaining at common class. The largest of these was from a small bipolar spot near the northwest limb. A number of other low common class flares were observed, however a number of these were from spots on or around either limb with only two on disc spots on the disc seeing any flare activity. The first of these is a longitudinally wide but simple region, but has some slight magnetic complexity apparent on solar imagery. The other flaring spot was a simplifying region to the southwest of another larger but simple sunspot on the northwest disc. This larger spot has seen, with some growth of its leader spot, but currently remains stable. Overall, there are currently eleven sunspot regions on the disc, however these have remained largely simple.

No Earth-directed CMEs (coronal mass ejection) were detected in available imagery.

Solar Wind / Geomagnetic Activity: A weak enhancement was potentially observed as Earth moved into the region ahead of a potential increase to the solar wind speed from a coronal hole. Despite this, speeds remained at background, around 300-350 km/s. The total interplanetary magnetic field strength (IMF), was generally weak but increasingly erratic and strengthening slightly after 17/1600 UTC, to peak around Moderate by 17/2028 UTC. The north-south component was initially weak and variable, but became predominately moderately positive from 17/1630 UTC. Geomagnetic activity was Quiet to Unsettled (Kp1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained predominately at background, however a very slight uptick was observed 17/0500-0900 UTC, due to an eruption that occurred on the Sun's southwest limb.

Four-Day Space Weather Forecast Summary

Solar Activity: Low activity is likely, but with a chance of isolated Moderate flares. There is the potential for a more notable active region to rotate onto the disc day 2 (19 Aug).

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Ongoing enhancement is possible early on day 1 (18 Aug) due to a transition into the fast wind of a weak coronal hole, with winds likely only peaking around 400-450km/s. These easing later day 1 and then persisting at background through the rest of the period. Quiet to Unsettled geomagnetic activity at first, with a slight chance of Active intervals. This easing later day 1, to be mainly Quiet with a decreasing chance of Unsettled intervals through the period.

Energetic Particles / Solar Radiation: The count rate of energetic particles is forecast to persist at background levels with no solar radiation storms occurring.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	35	40	40
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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